

Claims:

1. A circuit board (1) with at least one substrate layer (2) and at least one optical channel (3), **characterized** in that at least one substrate layer (2) of the circuit board is made of plastic, and a mould has been used for shaping the substrate layer (2), that the substrate layer (2) has been provided with a shape substantially corresponding to the shape of the optical channel, and that the optical channel (3) has been formed in said shape formed in the substrate layer.
2. The circuit board (1) according to claim 1, **characterized** in that the substrate layer made of plastic is provided with at least one optical channel (3) made of a material which can be set in a state where it conducts optical signals, and the thermal expansion coefficient of the material substantially corresponds to the thermal expansion coefficient of the thermoplastic used in the manufacture of the substrate layer.
3. The circuit board (1) according to claim 1 or 2, **characterized** in that the plastic used in the substrate layer (2) is thermoplastic.
4. The circuit board (1) according to claim 1, 2 or 3, **characterized** in that at least one substrate layer (2) of the circuit board and/or at least one optical channel (3) formed in connection with the same has been made by injection moulding.
5. The circuit board (1) according to claim 1, 2 or 3, **characterized** in that the shaping of at least one substrate layer (2) of the circuit board has been performed by hot pressing.
6. The circuit board (1) according to any of the claims 1 to 5, **characterized** in that the optical channel (3) formed in at least one substrate layer (2) of the circuit board comprises at least one reversing structure (4) for changing the direction of optical signals.
7. The circuit board (1) according to claim 6, **characterized** in that the optical channel (3) comprises two end points, and that the optical

channel (3) is arranged to transmit optical signals between said end points.

8. The circuit board (1) according to claim 7, **characterized** in that
5 said reversing structure (4) is provided in connection with both end points.

9. The circuit board (1) according to claim 6, **characterized** in that
10 said optical channel (3) is substantially elliptical in the main direction of the circuit board (1), wherein said reversing structures (4) for changing the direction of optical signals are provided in connection with the focii of the elliptical form.

10. The circuit board (1) according to any of the claims 6 to 9, **characterized**
15 in that said reversing structures (4) comprises a bevelling, by which the direction of optical signals is arranged to be changed.

11. The circuit board (1) according to any of the claims 6 to 9, **characterized**
20 in that said reversing structures (4) are formed substantially to comply with the shape of a quadratic curve or a curve of a higher power.

12. The circuit board (1) according to any of the claims 6 to 9, **characterized**
25 in that said reversing structures (4) have substantially the shape of a circular cone.

13. The circuit board (1) according to any of the claims 1 to 12, **characterized**
in that the optical channel (3) comprises at least one core layer (3.2) and at least one cladding (3.1).

30 14. A method for manufacturing a circuit board (1), in which the circuit board (1) is provided with at least one substrate layer (2) and at least one optical channel (3), **characterized** in that at least one substrate layer (2) of the circuit board is made of plastic, and a mould is used for
35 shaping the substrate layer (2), by which mould the substrate layer (2) is provided with a shape substantially corresponding to the shape of

the optical channel, and that the optical channel (3) is formed in said shape formed in the substrate layer.

15. The method according to claim 14, **characterized** in that the substrate layer made of thermoplastic is provided with at least one optical channel (3), in whose manufacture a material is used which can be set in a state to conduct optical signals.

16. The circuit board (1) according to claim 14 or 15, **characterized** in that a thermoplastic is used for forming the substrate layer (2).

17. The method according to claim 14, 15 or 16, **characterized** in that at least one substrate layer (2) of the circuit board and/or at least one optical channel (16) formed in connection with the same is made by injection moulding.

18. The method according to claim 14, 15, 16, or 17, **characterized** in that at least one substrate layer (2) of the circuit board and/or at least one optical channel (3) formed in connection with the same is made by hot pressing.

19. A method for manufacturing a layer of a circuit board (1) in a continuous process, in which the circuit board (1) is provided with at least one substrate layer (2) and at least one optical channel (3), **characterized** in that at least one substrate layer (2) of the circuit board is made of plastic, and a mould is used for shaping the substrate layer (2), by which mould the substrate layer (2) is provided with a shape substantially corresponding to the shape of the optical channel.

20. The method according to claim 19, **characterized** in that the continuous process used is a reel-to-reel process.

21. The method according to claim 19 or 20, **characterized** in that the optical channel (3) is formed in the shape provided in the substrate layer.

22. The method according to claim 19 or 20, **characterized** in that the optical channel (3) used is the shape provided in the substrate layer.

5 23. The method according to any of the claims 19 to 22, **characterized** in that the shape substantially corresponding to the shape of the optical channel is formed by hot pressing.